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National Intelligence Officers

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MEMORANDUM FOR THE RECORD

STAT FROM : [redacted]
NIO/SS/Soviet Science & Technology

SUBJECT: Review of Volume on Soviet Science & Technology

1. The March 20, 1978 issue of Chemical and Engineering News carries a lengthy review of the volume on Soviet S&T which I edited, and to which I contributed my own analysis. The volume arose out of a workshop on Soviet S&T which I organized and chaired while I was the Soviet Program Director at the National Science Foundation (NSF). One aspect of the review is subject to possible misinterpretation: I am identified as being with the CIA but without any further indication that the volume was the result of my work while I was at NSF and not at the Agency.

2. I also have been alerted that other US media are considering reviewing the volume.

3. In further connection with the volume, I have also been told that I may be contacted by C&EN on a story it is considering doing on the role of science and scientists in national security. If this proves the case, I will obviously consult with appropriate Agency offices on the extent to which I can be responsive to any C&EN inquiry.

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Attachment:
Subject Review

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over the next two or three years of conducting a thorough review of mat 's policy issues and Approved For Release 2004/09/28 : CIA-RDP88-01314R000100190025-8 terials R&D program. One major component of the study, Smith explains, will examine minerals demand, substitutions, recycling, and conservation.

Smith acknowledged that there have been numerous studies of minerals and materials over the past decade, none of which has led to any perceptible changes in government policies or practices in this area. However, he maintains that this study will be different because it was requested by the President and the product of the study will be a decision memorandum for him, not a report as has often been the case. Whether the subcommittee will buy that conclusion and see the OSTP study as negating any need for legislation remains to be seen. □

Disposal of chemical wastes probed

Last December in the small southern New Jersey community of Logan Township an accidental explosion at a chemical waste processing plant took six lives. Chemical plants have accidents from time to time and even with rigorous precautions some chemical operations can be a dangerous business. But attention has been focused on the New Jersey accident largely because it is one of the few waste chemical processing facilities in the U.S.

But does this mean that such plants are extraordinarily dangerous operations? Probably not. Observes Dr. Glenn Paulson, deputy commissioner for science for the New Jersey Department of Environmental Protection: "It may turn out that such facilities are no better or [no] worse than any other type of facility, but because there are (unfortunately) so few of them, they are less familiar and therefore seem riskier." The waste chemical processing plant was operated by Rollins Environmental Services.

That there is a need for chemical waste processing plants is not in dispute. Rep. James J. Florio (D.-N.J.) notes that "with the imminent phasing out of open dumps, industry in states like New Jersey is hard pressed to dispose of hazardous waste." Florio's point is underscored by recent revelations that chemical wastes have been illegally dumped on landfills in New Jersey, a practice that Florio warns could be the start of an ominous "bootleg" disposal industry operating under cover of darkness.

Early this month the House Interstate & Foreign Commerce Subcommittee on Transportation, chaired by Florio, held hearings on the disposal of hazardous wastes, in particular implementation of the hazardous waste provisions of the Resource Conservation Recovery Act (RCRA) enacted in 1976. Florio believes that timely and effective rule making under the act would go a long way toward solving what he perceives to be a major threat to industrialized states such as New Jersey.

The extent of the hazardous waste problem is largely related to groundwater contamination, according to Steffan W. Plehn, an assistant administrator for solid waste at the Environmental Protection Agency (which is charged with carrying out RCRA). Plehn points out that a 1977 EPA study of land disposal of industrial wastes showed that in 43 of 50 sites sampled by the agency heavy metals and organic chemicals had found their way into groundwater. Moreover, notes Plehn, "It is estimated that up to 90% of the industrial hazardous waste is being disposed of by the same methods that have produced the damages documented to date."

Grim statistics such as these argue strongly for vigorous implementation of RCRA , Florio insists. But they probably also are strong arguments for building more facilities such as the Rollins plant, suggests New Jersey environmental official Paulson. "It is a fact that the destruction of the Rollins facility has placed many chemical companies in the position of losing their preferred choice for disposing of their chemical wastes," he points out. For example, the Rollins plant alone had a capacity to incinerate, or otherwise render disposable, roughly 10% of all the chemical wastes produced in the state. "I wish I could report that there are a large number of modern sophisticated facilities on the East Coast that could take up this slack, but there are not," Paulson conceded to the subcommittee.

A major hurdle to building an adequate number of plants to handle an estimated 3.4 million metric tons of toxic wastes produced annually is opposition from the people who would live near the plants. A good example is a lawsuit filed by local citizens in New Jersey to prevent the Rollins plant from reopening. EPA's Plehn likens the opposition to that encountered by utility companies when they propose to build nuclear power plants.

EPA sees its role in hazardous waste management as sort of a federal "godfather" to the states. Plehn says that the agency will lay out uniform national standards this year for hazardous waste treatment and then help the states over the next two years to develop programs that meet the federal guidelines. If the states choose not to regulate hazardous waste treatment, then the federal government will step in. But "our strategy is to maximize state assumption of the provisions," says Plehn.

New Jersey's Paulson suggests that his state might want to embrace a system for siting facilities such as the Rollins plant in much the same way as nuclear power plants are located—including detailed engineering studies, environmental impact studies, and risk analyses. Paulson does not conclude that waste processing facilities are necessarily a bad thing. For one thing, he told the committee, "our market is already with us." □

Florio: industry is hard pressed

Science compared in U.S. and U.S.S.R.

A comprehensive new report on Soviet science and technology has just been published by George Washington University under a grant from the National Science Foundation. The report is significant because while describing such specific topics as the place of the Soviet Academy of Sciences in the overall organization of Soviet science, U.S. science policy seen through Soviet eyes, Soviet technological performance, factors in U.S.-U.S.S.R. technological interactions, and minutely documented macroeconomic evidence of the value of machinery imports to the Soviet Union, it emphasizes larger themes through frequent summaries and overviews.

The report was organized and edited by John R. Thomas of the Central Intelligence Agency's special studies group and Ursulla M. Kruse-Vaucienne of NSF, and is the summary of a workshop held in Warrenton, Va., late in November 1976. It consists of papers given at the workshop plus the overviews written after the gathering. Its issuance comes at a pivotal time in Soviet-U.S. relations, with the breakdown of détente over events in the Middle East, the Horn of Africa, and Rhodesia, combined with current but lately endangered attempts to renegotiate the Soviet-U.S. agreement on scientific and technological exchange.

"Predicting trends in the U.S.S.R. is uncertain and we should explicitly acknowledge this difficulty," the report says. "Nevertheless, we have accumulated substantial nonquantitative information about the Soviet Union, particularly about its science. And the science area is a direct link to an understanding of other aspects of the Soviet system of interest to us, e.g., economics, politics, and defense."

Despite some differences of opinion within the Soviet leadership that in- Approved For Release 2004/09/28 : CIA-RDP88-01314R000100190025-8 ies between the two countries are all that useful, the report says that the movement seems to be

toward increased interaction. The qualms originate with the more politically attuned Soviet leaders—such as the more conservative communist ideologues and the secret police—who believe that exposure to the more advanced U.S. technology will tend to weaken the zeal for communism among Soviet scientists.

But, says the report, "the pressure on both sides to improve the quality and extent of their interaction can be viewed as a part of the increasing international interdependence and global concerns over food, health, energy, resources, communication, and weather. As these imperatives encourage more frequent and intense interactions, the existing tensions are likely to be reduced."

The feeling of most of the participants in the workshop was that Soviet civilian technology as opposed to military technology is backward in comparison with U.S. standards but that the reason was not the poor quality of Soviet science but in its application to industrial processes.

"This weakness exists in part by conscious choice," the report states. "Political control takes precedence over efficiency. But the Soviet regime clearly recognizes this shortcoming and has sought many times to alleviate it by reorganizing the Soviet scientific and technical efforts, while at the same time not losing any control."

There remains a significant inferiority complex among the Soviets toward U.S. accomplishments in technology, according to the report. It says that the Soviets measure U.S. technological achievements as the criteria for their own successes. "Undoubtedly," it says, "the Soviets view this as a temporary condition, and that their desires and their own ability to meet their needs for such technology will soon converge." But most participants expressed "doubt about such a convergence, given the fundamental sluggishness of the Soviet system."

As a result, it continues, "the Soviets turn to the west for whole new plants and processes which can be plugged into their economy as a substitute for indigenous development. But their society is then cheated of incorporating preliminary trial-and-error experience into its technological culture; this contributes to the U.S.S.R.'s systemic weakness."

The report enumerates 12 weaknesses within Soviet science and technology:

- Party interference in science affairs.
- Inflexible planning and management.
- The stifling effects of historical Soviet bureaucracy, part of the "cultural propensity for avoiding risk and responsibility."
- The pre-emption of resources by the military.
- Dependence on the west for scientific input.
- Resistance to technological change and specifically to innovation in the industrial economy.
- Lack of technical management and organizational infrastructure, restricting the flow of new industrial products and processes.
- Political dominance over scientists.
- Inability to integrate science with production and marketing successfully.
- Slow diffusion of information within the country due to low credibility among the intelligentsia of regime-supplied information, along with a "lack of photocopy machines, scarcity of advertising literature, and ineffective technical professional societies."
- Difficulties of integrating science with broader economic goals.
- Insufficient material incentives for innovation.

The report is skimpy on strengths within the Soviet system, especially any factors that could pose a threat to U.S. dominance. For example, U.S. military strategists are reported to be highly concerned over the possibility that the Soviets could be superior to the U.S. in military command and control systems through the use of cybernetic principles, a field most U.S. scientists in their reductionist transition tend to ignore. One observer says the Soviets have found a way to interconnect electronic "black boxes" and now can easily integrate land, air, and naval forces in one communications system through signals undetectable to western sensors.

One of the report's few references to Soviet cybernetics says merely that cybernetics in the U.S.S.R. is a "preoccupation"—"a vicarious yearning for the abstractions of feedback processes that might provide the flexibility and vitality absent in real life." Soviet cybernetics and applied mathematics may just provide some insights the U.S. could use in managing complexity.

But the report does give significant space and respect to military research and development in general, underscoring its dominance over the civilian sector and, indeed, the likely major incentive behind Soviet interest in continuing scientific exchanges with the west.

One of the more interesting speculations in the report is that the widening gap between the U.S. and U.S.S.R. in technology could result in the weakening of the Soviet internal fabric. Soviet ideology says communism will prevail because, among other things, social evolution is on its side and that, through science, the Soviet system is more convergent with social evolution than is capitalism. If the gap in science and technology continues to widen, the strength of the communist science-based ideology could weaken—unless the west itself becomes weakened through its own internal fragmentation.

In any case, the NSF report is a thought-provoking and timely contribution to international science and economic policy. The papers there are presented by top individuals in the field and among its major contributions is pointing out a big gap in the way the U.S. is organized to integrate data on Soviet technical capabilities. There is no such observatory and the report says it should have. □